Environmental Aspects in the UEL Design Course: Legal Conceptions and Reality

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Açıklamalı [I1]: ACHEI MAIS INTERESSANTE COLOCAR NO TÍTULO **VERSUS** (EM OPOSIÇÃO À REALIDADE) DO QUE "E" A REALIDADE. AS DIRETRIZES CURRICULARES PREGAM UMA COISA, MAS A UNIVERSIDADE FAZ OUTRA.

ABSTRACT

The current environmental problems have brought forth a demand for professionals who can conceive their products and services in a manner which is less harmful to the environment. Therefore, university courses must set up a curricular structure focused on this approach, both in terms of specific disciplines and of interdisciplinarity. Thus, this paper aims to analyze the emphasis currently placed on environmental issues in the curriculum of UEL (State University of Londrina) Graphic Design course. For that purpose, documentary research was carried out in state and federal laws and bibliographical research in scientific articles, books and theses. In addition, a specific diagnosis was made via a questionnaire applied to the course students, as well as an interview with one student, based on several different themes. The results have shown that we are in a transition phase, i.e. some educational laws and policies have already incorporated the need to address environmental issues effectively in the curriculum, while others have not. Our analysis of the course curriculum has shown that it still fails in this respect, since although it includes the Design for Sustainability discipline, the main emphasis of the course is still placed on marketing aspects.

Açıklamalı [I2]: ACRESCENTEI.

1. INTRODUCTION

Given the current environmental issues, design students need to be prepared to conceive products and services that go beyond the traditional concept of design – i.e., their responsibility now goes beyond the adequate functioning of that good or service and must also address its socio-environmental impact throughout its life cycle. For this change to take place it is necessary that current undergraduate courses have an adequate curriculum structure and an adequately prepared faculty. Within the Design field, the Graphic Design discipline is the one that faces more challenges in this respect, since in comparison to Product Design it has fewer bibliographical references and its environmental studies are more recent.

The main objective of this paper was to reach an overall view of the environmental approaches in the UEL Graphic Design course and to find out whether the students' training is actually focused on the current environmental issues. This objective was achieved through the analysis of the current educational legislation and of the curriculum of the UEL Graphic Design course, as well as through questionnaires applied to the students asking about their degree of interest and knowledge of the subject.

2. DESIGN TEACHING IN FACE OF CURRENT ENVIRONMENTAL ISSUES AND ITS LEGAL ASPECTS

According to Pazmino and Santos (2017), design is generally taught – just as we see in other areas – totally ignoring the current immense environmental imbalances, already described and proven by science; rather, its didactic guidelines are still driven by marketing considerations. "Theories and approaches to innovation, marketing and consumption are emphasized, while issues related to the environment and sustainability are scarce in educational institutions" (Pazmino & Santos, 2017, p.12).

Since the beginning of Design teaching in Brazil, with the launching of the School of Industrial Design in Rio de Janeiro in 1963, the curriculum of Design courses has focused on marketing concerns, although environmental problems were already included in similar courses in developed countries. Today many Design courses include sustainability issues as a separate discipline. As a consequence, students do not apply those concepts to the projects proposed in other disciplines. In several universities, sustainability is taught only at the end of the course, when students will have already done several projects without including sustainability precepts and therefore never reflected upon the environmental aspects involved in their projects. (PAZMINO & SANTOS, 2017).

Still according to Pazmino and Santos (2017), sustainability must be taught transversally, in a cross-disciplinary approach, thus changing the whole teaching paradigm and bringing about

[...] a holistic view of current issues affecting society, making students more aware of relevant issues regarding their ethical, social, and environmental responsibility in their professional activities. It will also enable them to shape their codes of conduct so as to become critical, active and reflective citizens in regard to the multiple dimensions of sustainability (Pazmino & Santos, 2017, p. 15).

The sustainability paradigm demands a novel adaptation of educational guidelines. Therefore, State of Paraná Law nr. 17,505/2013 established the State Environmental Education Policy and the Environmental Education System (Lei 17505, 2013). As to higher education, its Paragraph 2 determines the fostering of

> "[...] environmental education at all school levels and of society's commitment to preserving, conserving, restoring and improving the environment [...] in an integrated, **interdisciplinary and transversal** manner in the school curricula, as well as integrating it as both applied practice and as a continuous and permanent educational principle at all levels and modalities of formal education." (Lei 17505, 2013, p.3, Emphasis is ours.)

The Paraná State Environmental Education Program promotes research, studies and production of teaching materials, and recommends that Environmental Education should be "an integrated, interdisciplinary, transdisciplinary and transversal educational practice in the school curricula." (Lei 17505, 2013, p.6). In the specific case of higher education, Environmental Education must be included in the Paraná state political-pedagogical project.

However, analyzing the national curricular guidelines for Design undergraduates, through CES/CNE ruling 0195/2003, approved on August 5, 2003 and published on Diario Oficial on February 12, 2004, as well as CNE/CES5/2004 Resolution of March 8, 2004, the neglect of environmental issues is evident. Of the thirteen articles of the ruling only the 5th Article, Item I mentions the subject:

> The Design undergraduate course should include, in its pedagogical projects and in its curricular organization contents and activities that address the following interconnected axes: I - basic contents: the study of Design history and theories in their sociological, anthropological, psychological and artistic contexts, covering project methods and techniques; means of representation, communication and information; the study of relations between user/object /environment; the study of materials, processes, management and other relations with production and market. (Resolução nº 5, 2004, p. 2).

Thus, each course must take the initiative to insert a discipline with those specific themes in its grid, as well as how to apply them in projects etc.

In view of this mismatch between the curricular guidelines and the Parana state environmental education policies, we will proceed to analyze how the UEL Graphic Design course has positioned itself in this regard.

3. GRAPHIC DESIGN TEACHING AT UEL AND SUSTAINABILITY ISSUES

The UEL Graphic Design course, which was established in 1996, seeks to:

> Offer instruction in Graphic Design, aiming to develop the students' analytical, critical and expressive skills, integrated into contemporary reality; to give a sound basis and apply theoretical principles and practical activities to work in the methodological phases of graphic product designs; to find out major human needs and their relationships with production systems; to provide students with their integration into the socioeconomic and cultural system of their regions; to develop the students' analytical, critical, technical, creative and expressive skills; to apply ergonomic, cultural, economic, social, technological and aesthetic aspects to graphic projects; to propose visual solutions to communication and information issues; to develop their analysis, reflection and synthesis skills stemming from research activities and to coordinate, synthesize and apply design methodologies, with their functional, plastic, aesthetic and symbolic features, to the creation of graphic products (Universidade, 2017a, p. 1).

Açıklamalı [I3]: OMITI AQUELA FRASE SEM SENTIDO.

Although the above mentioned objectives indicate important aims for a graphic designer's training, there is no mention of aspects related to professional designers' interaction with their environment. However, it is important that a student can see himself or herself as someone who interacts with nature and impacts it in some way, as a professional who knows how his or her projects will affect their environment and also their social milieu. It is essential that students align their graphic design projects with Graphic Ecodesign principles and that they find and apply solutions for any potentially unsustainable design projects.

The course includes the Design and Sustainability discipline, taught in the third year, whose syllabus is, briefly, "Environmental sustainability and sustainable development. Environmental economic thinking.

Design geared to sustainability, taking into account product life cycle: steps and strategies. Methodologies and tools. Design and environmental management" (Universidade, 2017b, p. 1).
A new Pedagogical Project has recently been implemented in the course (2017), thus giving it an interdisciplinary profile, with a stronger coordination among its various disciplines.

4. GRAPHIC ECODESIGN

In order to understand Graphic Ecodesign, it is necessary to grasp the concept of environmental sustainability, which
[...] refers to the systemic conditions according to which, at the regional and global levels, human activities should not interfere with the natural cycles on which the resilience of our planet is based; at the same time, they should not impoverish its natural capital, which should be passed on to future generations (WCED, 1987 apud Manzini & Vezzoli, 2008, p. 27).
Thus, Ecodesign can be defined as "a design model guided by ecological criteria." This term, although self-explanatory, unfolds in different ways in its various applications. When applied to graphic design, it refers to performing this activity seeking to minimize its negative impact on the environment. Manzini and Vezzoli (2008, p. 28) present the general requirements for sustainable design:

- Relying your design primarily on renewable resources (while ensuring their renewal);
- Optimizing the use of non-renewable resources (such as air, water and land);
- Avoiding accumulating waste material that the ecosystem would not be able to "renature" (i.e., return to their original mineral substances and, importantly, in their original concentrations);
- Acting so that each individual and each community of the "rich" societies remains within the limits of their environmental space and that each individual and community of the "poor" societies can effectively enjoy the environmental space to which they are potentially entitled.

The first ideological guideline of Ecodesign is "green" design. This term was taken from political movements favored in the 1980's, when an increase in the general population's awareness of the multiple impacts on the environment, several Green parties emerged in Europe proposing this ideology.
In 1988 *The Green Consumer*, by John Elkington and Julia Hailes, was published. This guide was widely read by those who wanted to find out how to consume goods with minimal environmental impact. Afterwards, the Friends of the Earth group raised the issue of Eco-consumerism or "Green Con" (Madge, 1997). In view of this market demand, many designers began to work on environmentally friendly products, often utopian. Thus, green design lost a quite a bit of its reputation due to a large volume of non-ecological products and unreliable certificates and stamps.
After World War II (1939-1945) Europe experienced a severe economic crisis, which prompted a culture of "less is more", driven by the restriction of materials and energy. Thus, many products that consumed fewer raw materials started to be highly appreciated.

Later, in the 1970s, Victor Papanek's book *Design for the Real World* laid the groundwork for Ecodesign. In this book, Papanek innovated by presenting a designer's moral responsibility in the face of environmental problems. He argued that a designer should raise people's awareness to those problems rather than further promote consumerism. In his view, when socioeconomic and political crises affect access to materials, designers are motivated to plan and design products with greater creativity to improve product performance.
Another influential book by Victor Papanek was *The Green Imperative*, 1995, where he championed the spiritual aspect of ecological consciousness. He believed that there are spiritual issues inherent in the relationship between man and nature. Furthermore, he considers that in the 21st century design would be transformed by environmental issues, taking quality into consideration when it comes to consumption. He proposes that designers must question the very concepts of products and services, taking into account their environmental performance rather than their profit potential exclusively (Lopes, 2016).
Papanek also inspired the 1960s counterculture movement, when several projects were launched that that prioritized social and environmental responsibilities, set against industrialized mass production. Designers then came up with the concept of "conscious consumption" and with products for educational purposes, among other proposals; however, these and other Ecodesign initiatives remained dispersed (Lopes, 2016).

Regarding Graphic Design, Papanek questioned the importance and purpose of packaging design. He objected to the amount of ink used in graphic design and to the difficulty of recycling it. He exemplifies his

point with powdered soap packages, stating that generic packages are more elegant and communicative than brand packages that invest in design aiming at higher sales to the end consumer (Lopes, 2016).

In 1971, with oil prices on the rise, there was an improvement in technologies for alternative sources of energy. Thus the Product Life Cycle concept emerged, quantifying the impact of a product or service in each phase of its life, through the analysis of its inputs (raw material and energy) and outputs (carbon emissions and waste in general). Later, in the 1980s, with the beginning of a wave of eco-consumerism, many products considered "green" began to be consumed in large quantities in Europe and the United States. In order to assure more security to ecological products the ISO 14000 ecological certificate was launched (Lopes, 2016).

5. RESEARCH METHODOLOGY

The methodological procedures applied in the stage of theoretical grounding were exploratory, through bibliographic and documentary research, based on sources like books, scientific articles and legislation (GIL, 1999). The main authors referred to were MANZINI AND VEZZOLI (2008) and LOPES (2016).

In order to gauge the student`s interest and knowledge about environmental issues and Ecodesign, a questionnaire was conceived through an online form with 8 multiple choice closed questions, of which 3 contained spaces for discursive responses. The target group were the undergrads of the UEL Graphic Design course; from approximately 80 students overall, 30 answered the questionnaire. The questions were: (i) Do you believe the news stating that the environment is threatened by anthropic actions (those carried out by men)? (ii) Do you carry out environmentally conscious practices in your daily life, such as separating waste and saving water?; (iii) How do you assess your knowledge about graphic materials and processes in regard to their environmental impact?; (iv) Where did you acquire this knowledge?; (v) Do you consider that graphic products impact the environment?; (vi) Are you aware of any Ecodesign tools (such as checklists, for example) that can be applied to your projects in order to make your printed products less impactful?; (vii) Do you think that an ecological approach in the making of a graphic product raises its final cost?; (viii) Would you be interested in a potential Graphic Ecodesign module in the Graphic Design course?

Additionally, a senior student (randomly chosen) was interviewed so we could listen to the views of someone with a holistic view of the course, having already gone through all disciplines and projects. The interview was based on themes; according to GIL (1999), this type of structured interview is based on points of interest, that drive the interviewee to speak freely about each theme. The themes were: (i) Do you think the course has place any emphasis on environmental issues? If so, in what discipline? Was it at the beginning or at the end of the course? Were the issues discussed in isolation or applied to other disciplines as well? (ii) Do you consider that your professors stimulated you to search for new information on those issues?; (iii) Do you think the course has stirred up your critical sense?

5.1 DIAGNOSTIC RESULTS

According to the resolutions of UEL CEP (Ethics Committee on Research Involving Human Beings), the student must initially agree or disagree with the Term of Free and Informed Consent.

The first question asked if the student believed the news claiming that environmental problems are man-made. Only one respondent stated he had no knowledge of the subject; the others responded positively, thus showing that students are well informed on the issues.

The second question asked if the student has environmentally conscious practices in his daily life, such as separating waste and using water rationally. Seventeen students (56.7%) answered that they adhere to these practices "sometimes"; the remaining ones said that they perform these acts daily. This result is encouraging, since someone who has already incorporated those habits in his or her daily routine will transfer them easily to his or her professional activities.

The third question evaluated the respondent's knowledge about graphic materials and processes and their environmental impacts. It is interesting to note the high percentage (13.3%) of students who did not have any knowledge at all about graphic Ecodesign – almost twice as many as those who claimed to have advanced knowledge of the subject (6.7%). We think this results from the lack of literature on the subject (LOPES, 2016). No less than 80% of the students stated that they have a medium degree of knowledge of the subject – an encouraging finding, showing they are interested in the subject and have already sought

information about it. The next question asks about the source of this knowledge: 65.4% say they have acquired it at the university, while 34.6% pointed to the internet or other media.
The fifth question, an open one, asked students to write about the pollution potential of graphic products and their polluting source. The respondent had 3 options: a) those products do not impact the environment; b) they impact moderately; or c) they cause a strong impact. Those who responded that the environment is impacted were invited to write about what exactly makes them polluting. The responses were very diversified, covering topics such as deforestation for timber production; the release of pollutants during the production chain; the finishing and enhancement of graphic products (lamination, varnishes); paint binders; wasteful paper use; waste generated in the processes (even if this waste is recyclable); adequate disposal of packaging; lack of environmental awareness in the consumption of graphical products, as well as in primary school and high school teaching and also in home education; and input toxicity. One student wrote about the relationship between the layout design phase and the final impact of the product, producing an especially interesting analysis, according to Lopes (2016). The sixth question asked about the students' awareness of Ecodesign tools. Only one respondent answered yes, but did not specify which tool he was aware of. The seventh question asked the students' opinion as to whether or not a product becomes more expensive when it s has a lower environmental impact. Only 16.7% of the students said no. According to the results achieved in Lopes' thesis (2016), greener products do eventually become more expensive, but in most cases their final cost is reduced.
The last question asked if the student would be interested in a potential future module on Graphic Ecodesign in the course. Of the respondents, 90% said yes. Only 3 students answered "maybe", showing students are quite receptive to subjects related to the environment.
As for the individual interview, initially the student firmly stated that the course placed only a minimal emphasis on environmental issues, and in those rare occasions the subject was addressed in an isolated approach, without continuity. The student said Graphic Ecodesign was discussed only in the Graphic Production discipline, addressing the impacts of pre-printing and post-printing phases, as well as proposing arguments the designer could present so that the client would agree to produce a less impactful graphic product. However, none of these points was applied or addressed in other disciplines. Anyway, the respondent believes there should be a specific discipline to address this content in the first year (this discipline is part of the course but only taught in the third year). That respondent stated that it is necessary to educate students to become not only professionals, but also conscious citizens.

6. FINAL CONSIDERATIONS

Our analysis of state and federal legal documents, as well as UEL's Graphic Design course, shows that we are in a period of paradigmatic change, since the 2004 Curriculum Directive did not make any mention of environmental issues at all, while the 2013 Paraná Law asks for a more ecological approach in the curriculum. However, the curriculum analysis of UEL Graphic Design course and the applied diagnosis shows that although it has a Sustainable Design discipline, it is taught late (only in the third year); it focuses on general aspects of Ecodesign, rather than on Graphic Ecodesign; and does not have an interdisciplinary approach, such as practical applications in design projects. It can be said that the course approach is still mainly focused on market issues, rather than on socio-environmental demands, although it has had significant changes in the implementation of the most recent Pedagogical Project, in 2017. Most students are aware of environmental issues and expect the course to place its focus on issues related to environmental protection.
We can thus conclude that although the state legislation follows updated guidelines regarding the needs of a professional designer whose projects will be aligned with environmental demands, UEL Graphic Design course still needs to improve this alignment, in order to correspond to the expectations of the students.
We can also state that the course reflects the lack of specific educational materials for adequate teacher training in the specific area of Graphic Ecodesign.

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